Command and Control Unified Battlespace Environment (CUBE)

Overview Presentation

Outline

- **History**
- **Mission**
- **Infrastructure**
  - **C2WS Utility Layout**
  - **Connectivity**
  - **Core Systems**
- **Future/Goals**
- **Growing Pains**
- **Summary**

- ◆ **Fort Franklin -- the seed that became the CUBE**
  - – **Semi-annual Integration and Interoperability Field Exercises**
  - – **I&I accomplishments proved the power of a more coordinated application of ESC resources**
  - – **Limitation: Forts in operation for only 2-3 weeks at a time**
  - – **Identified need for full-time I&I capability**

- ◆ **Integration & Interoperability (I&I) support to Bosnia led to creation of CUBE in Dec 1995**

Bosnian Air Operations

CUBE Objectives
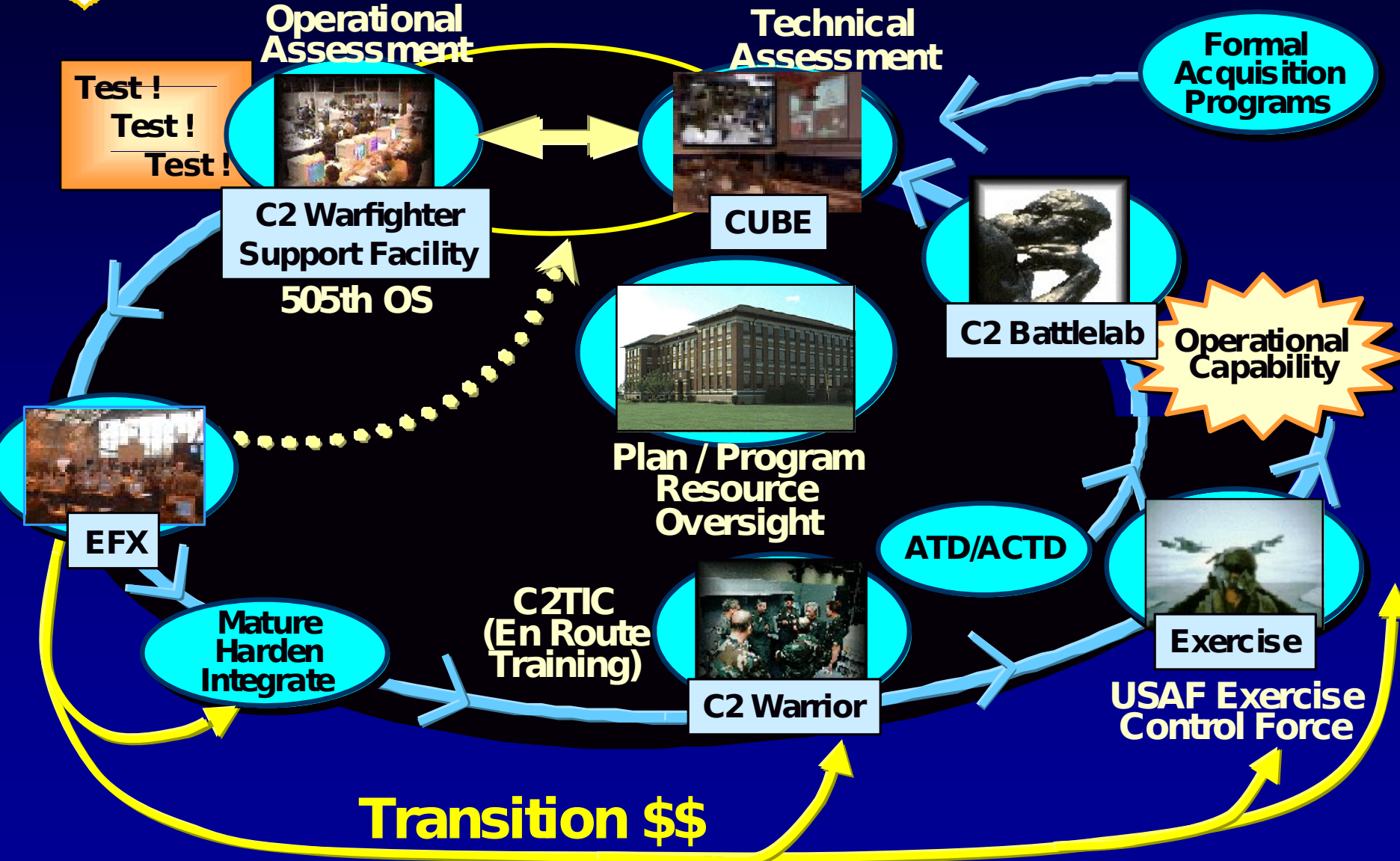## *Mission Today*

- ◆ **Help establish and manage the ESC C2 Weapon System to support:**

    - **The Warfighter**

        - **Work closely with AC2A/C2TIC in support of fielded systems -- MOA established**

    - **Exercises/Demonstrations/Experiments**

        - **<u>EFX 98/99</u>, Blue Flag, Roving Sands, JWID 97/99, etc...**

    - **Spiral Development**

        - **Facilitate I&I process for ESC systems**

        - **Provide opportunity for SPO to integrate individual system into the greater C2 Weapon System platform**

        - **ESC Home to IC2S (Public Utility)**

The Spiral Process

Operational Assessment

Technical Assessment

Formal Acquisition Programs

Test ! Test ! Test !

C2 Warfighter Support Facility 505th OS

CUBE

C2 Battlelab

Operational Capability

Plan / Program Resource Oversight

EFX

Mature Harden Integrate

C2TIC (En Route Training)

C2 Warrior

ATD/ACTD

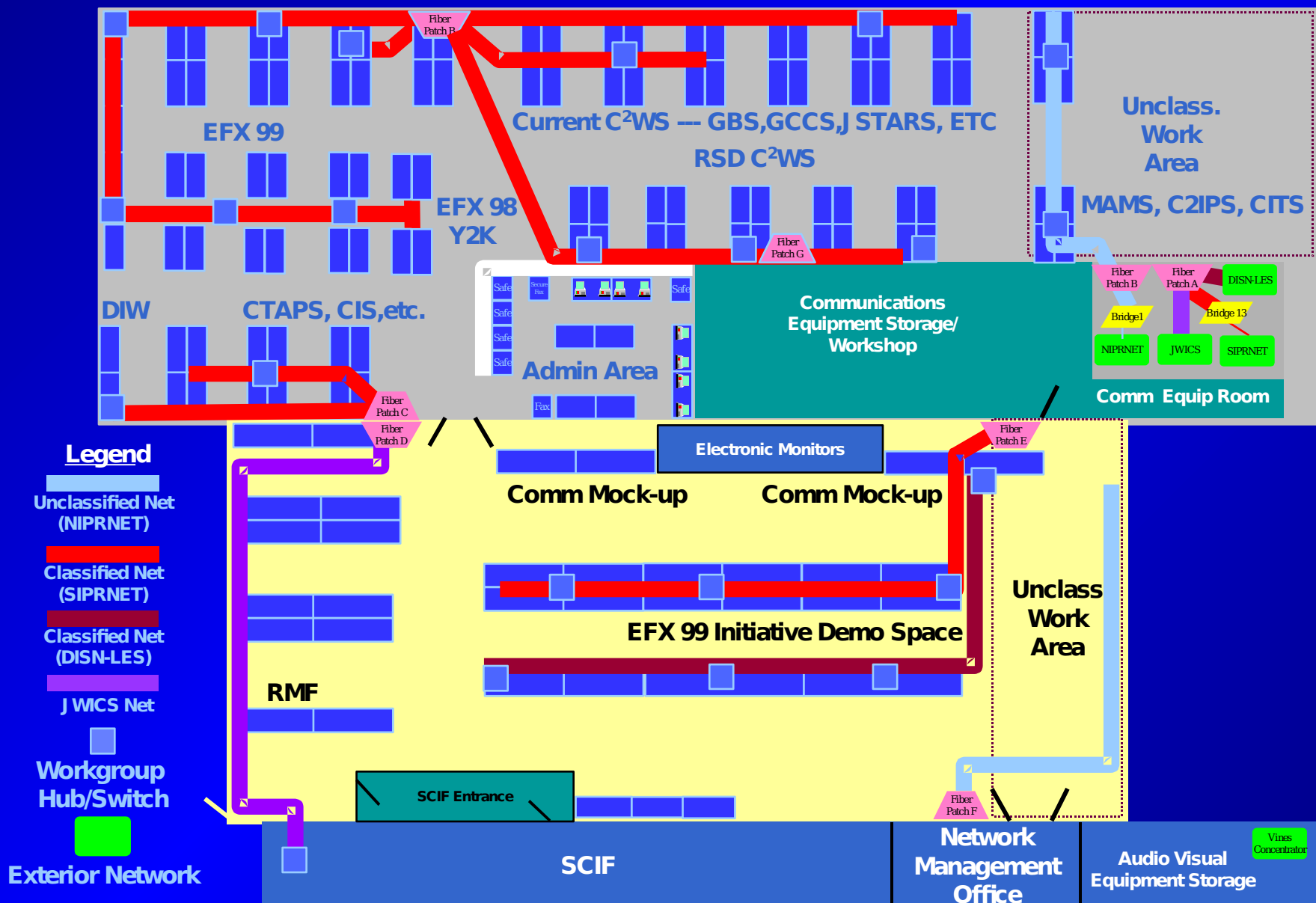Exercise

USAF Exercise Control Force

Transition $$

- **Help establish and manage the ESC C2 Weapon System to support:**

  - **Technology Infusion**

    - **Working with industry through innovative CRADAs**

  - **Battlelabs, Joint, and International Communities**

    - **MOA established with C2BL**

    - **Support 912 initiative**

  - **Y2K Integration Testing**

    - **C2 Weapon System end-to-end test in new CUBE facility**

CUBE Infrastructure
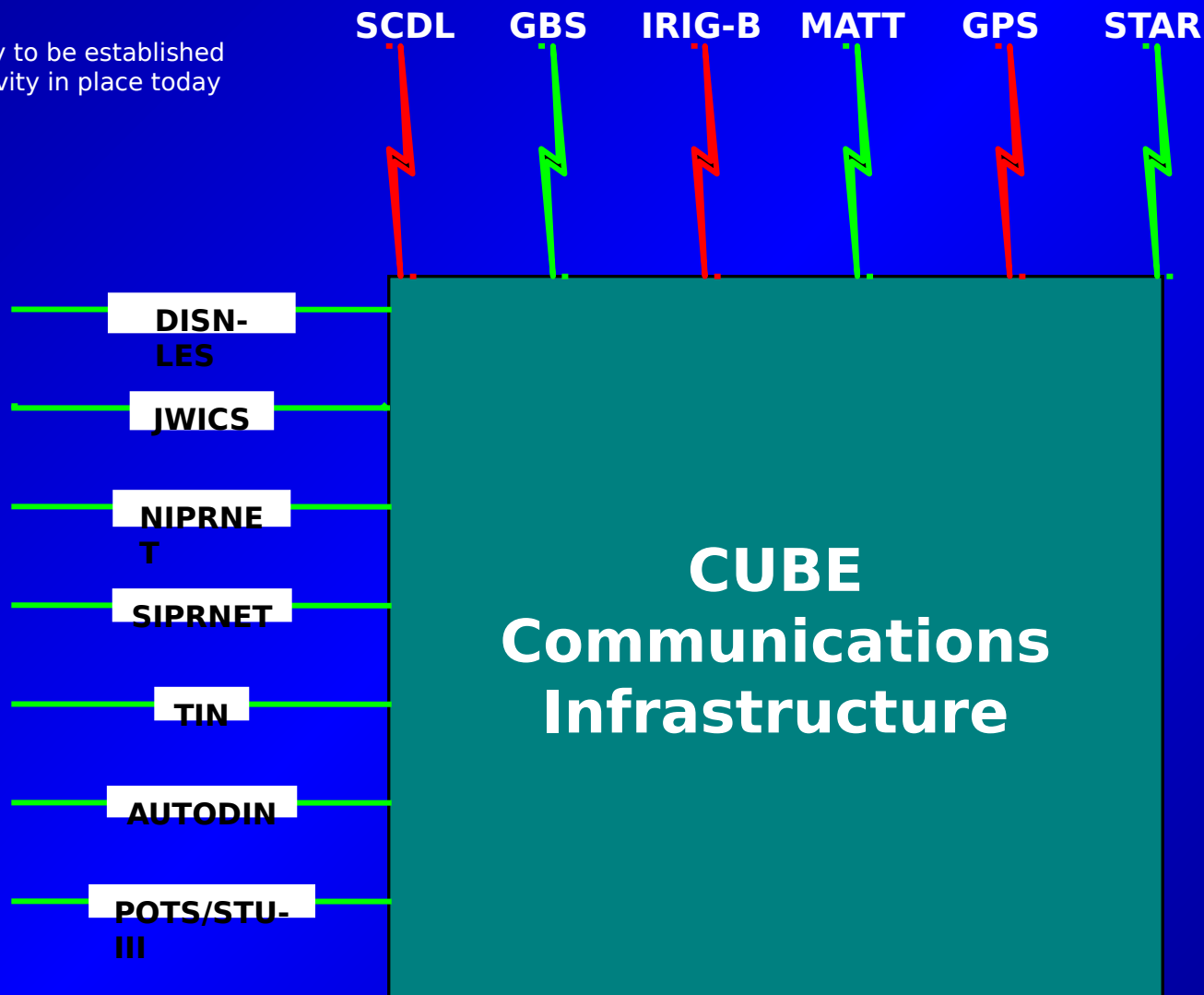## C2WS Utility Layout--Building 1607

CUBE

EFX 99

Current C²WS --- GBS,GCCS,J STARS, ETC

RSD C²WS

Unclass. Work Area

MAMS, C2IPS, CITS

Fiber Patch B

EFX 98 Y2K

Fiber Patch G

DIW   **CTAPS, CIS,etc.**

Safe / Safe / Safe / Safe — Secure Fax — Safe

Admin Area

Fax

Communications Equipment Storage/ Workshop

Fiber Patch B — Fiber Patch A — DISN-LES

Bridge1 — Bridge 13

NIPRNET — JWICS — SIPRNET

Comm Equip Room

Fiber Patch C
Fiber Patch D

Electronic Monitors

Fiber Patch E

Comm Mock-up   **Comm Mock-up**

Unclass Work Area

EFX 99 Initiative Demo Space

RMF

SCIF Entrance

Fiber Patch F

SCIF

Network Management Office

Audio Visual Equipment Storage

Vines Concentrator

Legend

Unclassified Net (NIPRNET)

Classified Net (SIPRNET)

Classified Net (DISN-LES)

JWICS Net

Workgroup Hub/Switch

Exterior Network

CUBE Infrastructure
Connectivity

RED = connectivity to be established
GREEN = connectivity in place today

SCDL **GBS** **IRIG-B** **MATT** **GPS** **STAR**

DISN-LES

JWICS

NIPRNET

SIPRNET

TIN

AUTODIN

POTS/STU-III

CUBE Communications Infrastructure

CUBE Infrastructure (IC2S)
Core Systems

System	Description	EFX99	AOC	TBMIF
AA Server	Automatic Associator			
ABI	Airborne Battlefield Intelligence			
ADSI	Air Defense System Integrator	√	√	√
ADVERSARY	C2 Nodal Analysis Tool		√	
AFMSS	Air Force Mission Support System	√		√
C2IPS	C2 Information Processing System	√	√	√
CIC	Combat Integration Capability		√	
CIS	Combat Intelligence System		√	
CITS	Combat Information Transport system			
CTAPS	Contingency Theater Automated Planning System		√	
CVW	Common Virtual Workspace	√		
DIW	Defensive Information Warfare			
GBS	Global Broadcast Service	√	√	
GCCS	Global Command and Control System	√		
IBIS	Integrated Battlespace Intelligence Server		√	
IBS	Intelligence Broadcast Service	√		
ISD (MIDB) Server				

CUBE Infrastructure (IC2S)
Core Systems

System	Description	EFX99	AOC	TBMIF
ISSE	Imagery Security Support Equipment			
JCMT	Joint Collections Management Tool	√	√	
JDISS	Joint Deployable Intelligence Support System		√	
JPT	JFAC Planning Tool		√	
JSIPS	Joint Synthetic Imagery Processing System		√	
JSWS	Joint Stars Work Station		√	
NRTD	Near Real Time Dissemination	√		
OMEGA	GPS Accuracy Prediction Tool		√	
PLGR	Precision Lightweight GPS Receiver		√	
Radiant Mercury	Guard			√
RMS	Requirements Management System		√	
RS-170 Video Link		√		
TBMCS	Theater Battle Management Core System	√		√
TFS	Tactical Forecast System		√	√
TSOC	Theater Support Operations cell with ERDAS Imagine and OMNI		√	
WCCS	Wing Command and Control System		√	
WOTS	Worldwide Origin Threat System		√	

Future/Goals
Where We Are Headed

- **Establish second CUBE operations, located in Building 1102D**
  - **Set up for Y2K testing of C2 Weapon System (beginning in April)**
  - **Operate in Building 1102D while CUBE facility renovated (2 years)**
  - **Support EFX 99 in Building 1607 (through Sep)**

- **Establish core C2 Weapon System in CUBE and identify additional systems in collaboration with AC2ISRC/C2TIC (AOC Baseline), Joint Community, CIPOs**

- **Continue providing spiral development and I&I support to ensure systems (upgrades and new) work within C2 Weapon System Structure**

Future/Goals
Where We Are Headed (cont.)

◆ **Rejuvenate innovation collaboration with AF Battlelabs, industry and other service labs**

◆ **Enhance connectivity to other locations**
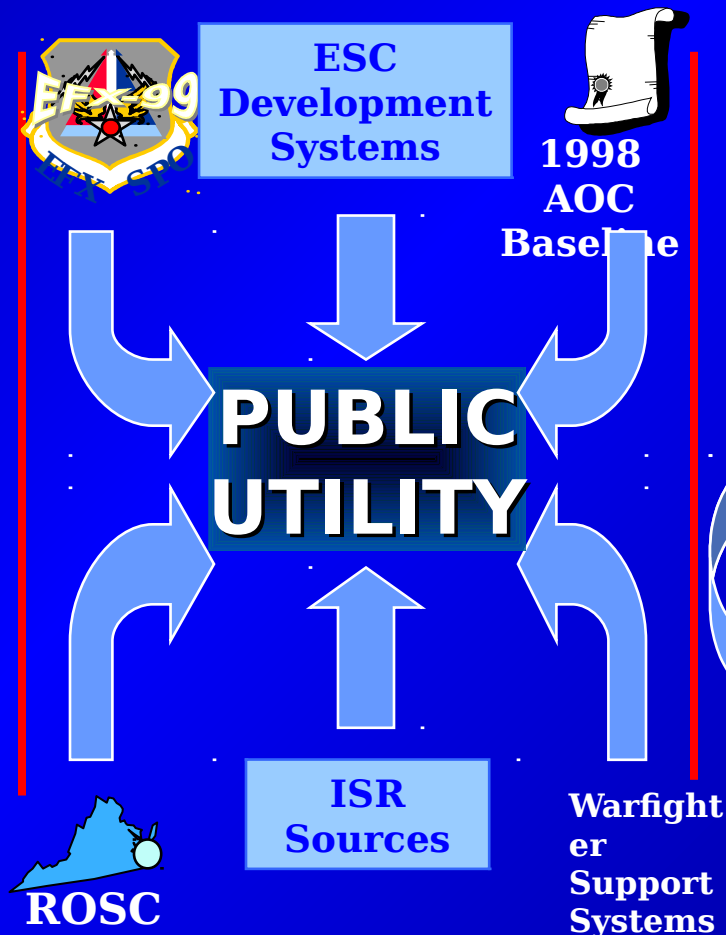
◆ **Expand sensor inputs into CUBE**

Future Goals
Core Systems Progression

PHASE I: Inception - Present

EFX 98
EFX SPO

1995 AOC Baseline

PUBLIC UTILITY

ROSC

Warfighter Support Systems: Osan, Vicenza

PHASE II: 1999 - 2000

EFX 99
EFX SPO

ESC Development Systems

1998 AOC Baseline

PUBLIC UTILITY

ISR Sources

Warfighter Support Systems

ROSC

PHASE III: 2001+

Chief Architect Council

Integrated C2 Platform

PUBLIC UTILITY

CUBE *"Growing Pains"*

- ◆ **Working on shoestring budget**
    - **Staff function--small budget**
    - **Not enough funds to establish infrastructure and maintain required staffing/expertise**

- ◆ **Highly dependent on SPOs for success**
    - **If SPOs do not play; no good way to force them**
    - **Need SPOs to pay as they play (equipment, system expertise)**

- ◆ **CUBE will be dislocated for two years**
    - **Away from main ESC campus**

- ◆ **How do we measure CUBE effectiveness**
    - **Number of sorties using CUBE; Hours CUBE used vs total hours available; Number and significance of problems prevented**

CUBE *"More Growing Pains"*

- ◆ **CUBE role vs. C2TIC role in support of IC2S**
  - – **Need to compliment each other--Not Compete!**

- ◆ **CUBE ⟷ EFX Interaction**
  - – **EFX will continue to be a major customer,**
  - – **But, CUBE has other customers too--need to support all.**

- ◆ **How will CUBE support CIPO?**
  - – **What does interconnectivity to Army and Navy labs entail?**
  - – **How will we best utilize that connectivity and interface?**
  - – **Need to define roles, responsibilities, and relationships.**

Summary

◆ **CUBE roles continue to evolve**

◆ **Striving to match reality with the vision**

◆ **We are eager to work with SPOs, other organizations, and industry**